

Hornblock CSB/wire spring adaptors

These etched hornblock adaptors provide the opportunity to use LRM turned hornblock bearings and cast hornblock guides with continuous springy beams or wire springs. The hornblock bearing adaptor fit directly onto the turned round section of the bearing. The distance from the bearing/axle centre line to the centre of the CSB/spring wire slot is 4.5mm.

A variety of wire spring and CSB mountings are provided.

- ◆ Single point CSB mounts (two types)
- ◆ Double point mounts (two types). Can be converted to single point mounts by removing one side before folding. The holes are at 1.0 mm spacing
- ◆ Adjustable mountings - with a maximum adjustment range of 3.0 mm

Owing to the variations relating to CSB or spring performance (loco weight, spring rates, etc.) we cannot provide specific guidance on CSB or spring wire sizes, etc. However, we recommend reference to the excellent CLAG website (www.clag.org.uk) which provides an in depth review of the topic as well as an Excel worksheet that can be used to calculate the spring size required for a particular application.

Otherwise it's a matter of trial and error!

For CSB applications "single" point mounts are required as this allows the CSB to "rotate" in the mounting as the wheels move up and down independently.

For springs mounted at both ends (semi-elliptical springs) then a single point mount is again the best option, so that the spring ends can "rotate".

For springs mounted at one end only (quarter elliptical springs) then a rigid mounting is best so use the double point mount to hold the spring at two points (see drawing).

Make the CSB/springs easily removable as you may have to change the wire diameter when the loco is completed and ballasted.

Assembly guidelines.

We recommend the use of LRM I45 solder and I2% Phosflux for assembly.

Hornblock adaptor.

Prepare hornblock as per instructions.

Fold adaptor "spring slot" to 90 degrees and fill fold line with thin fillet of solder.

Fit adaptor over the hornblock bearing extension as shown and solder in place.

CSB mount.

These are the small, single hole, etched mounts. Fold up and fill fold line with thin fillet of solder.

Double point mount.

Fold up and fill fold lines with thin fillet of solder. To convert to a single point mount for CSB simply remove one side.

Adjustable mounting.

Fold up both fixed and moving sections and fill fold lines with thin fillet of solder.

Solder a I4BA nut over the hole in the smaller moving part as shown. Fit inside the fixed section and screw a I4BA bolt into the nut as shown. Shorten the bolt so that it will clear the wire passing through the moving section when fully retracted.

The adjustable mounting provides two spring mounting points as designed. To convert to a single

mount type, file off a section of the moving section as shown.

Usually the CSB would be above the hornblocks, but it can be underneath if the frames will provide a suitable locating point for fixing the mounting.

Suggested assembly sequence.

Make up hornblocks and fit adapters.

Prepare frames by marking or scribing an axle centre line on the inside of the frames, using the etched axleholes for guidance.

Remove hornblock cutouts and mark locations for CSB or spring mountings. The locations will depend on both the calculated position and the location of spacers, etc. It may be easiest to fit the mountings at this time.

Assemble frames as per the kit instructions.

Fit the hornblock castings, using the coupling rods and axle jigs for accurate alignment.

Add the frame detailing (brake gear, etc.).

Paint/blacken the assembled frames before adding the wheels and axles, together with the motor and gears.

Fit the CSBs or springs before testing the chassis. Fit the completed body, together with any ballast, so that the springing can be set up.

Springing.

Individual axle springs can be used, either with a single point mounting at either end, or with one double point mounting (see drawing).

If using a single mounting (quarter elliptical spring) then a fixed or adjustable mount can be used but the spring should be fixed into the mounting, preferably by soldering.

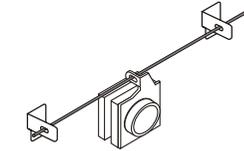
Mounting the spring at either end is preferable, as it reduces pivoting of the hornblock in its guide. In this case the single point mounting allows the spring wire to "rotate" wire-like the shackles at the end of a prototype locomotive leaf spring.

The strength or "rate" of the spring or CSB depends on both its diameter (bigger diameter = stronger), the material used, and the overall length (longer = softer).

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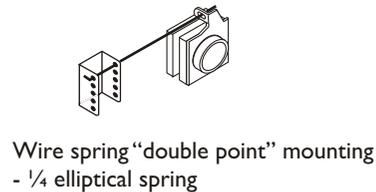
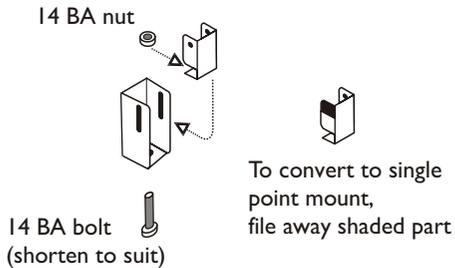
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Hornblock adapter



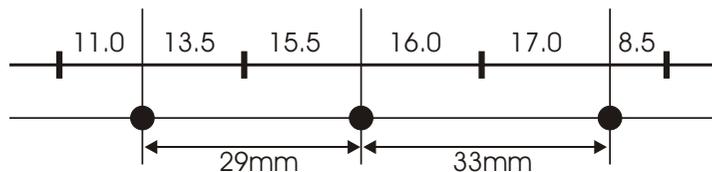
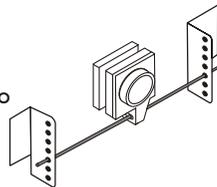
CSB "single point" mountings

"Adjustable mounting"



Wire spring "double point" mounting - 1/4 elliptical spring

Mounts can be used to bring CSB/spring below axle/hornblock (cut off one side to provide CSB pivot)



CSB example - LNWVR 0-6-0 weighing 6oz (150gms) using .4mm steel wire
 The CSB mount spacings shown provide equal wheel loading on all axles.
 Moving the two centre mounts out slightly will increase the loading on the outer axles to reduce fore and aft pitching.
 Data derived courtesy CLAG website

LONDON ROAD MODELS 4mm hornblocks and CSB/springing system

Cast horn-guides and bearings

These hornblocks are precision components and care must be taken in their application and use to provide reliable and consistent performance. The cast hornblock design has been carefully developed to provide an accurate component which can be fitted with the minimum of preparation but will provide a very accurate fit for the bearing block. In turn the bearing is designed to give large wearing surfaces for long term reliability. The lost wax casting process is accurate, but some slight distortion and shrinkage can occur. We aim for the casting to be correct to slightly undersize (rather than oversize) so some "fitting" may be required.

The hornblocks are designed to fit the standard 6 mm chassis cut-out provided in most etched or milled chassis kits. The hornblock is fitted from the INSIDE of the frame, with the flat face against the frame and the right-angle bearing guides towards the centre line of the chassis.

Hornblock installation

Carefully remove the casting sprue from the cast hornblock- This is best done using a piercing saw and cutting across the back face of the hornblock into the sprue and then around the top of the hornblock- if using cutters do not cut too close to the hornblock to avoid distortion. Carefully file smooth, and "tweak" out any distortion.

Check the fit of the bearings on the axles and ream to provide clearance if necessary. Try the round section on the rear of bearing in the hornblock from the front face. If it does not fit into the opening easily then gently file out the inside edge of the hornblock "arch". A small amount of flash from the casting process in this area can interfere with the easy movement of the bearing. Next offer up the square front face of the bearing into the space between the guides from the back of the hornblock. If it doesn't fit, carefully polish the sides of the bearings equally to fit between the guides. The bearing should fit into the hornblock correctly without sticking or excessive play. Mark the bearing and the hornblock so that they are always fitted as a pair.

The correct alignment of the hornblocks and bearings is determined by using the locomotive coupling rods together with the alignment jigs. The LRM taper end alignment jigs are machined from aluminium and can be lightly oiled to prevent corrosion. They are designed to fit our 1/8 inch top-hat and hornblock bearings and the tapered ends will accept coupling rods with the "standard" 2mm diameter hole or smaller.

Fit the bearings into the hornblock and roughly locate the hornblocks into the chassis on the inside of the frames, holding them in place with LRM soldering clamps. Fit an alignment jig through each pair of bearings and then fit the coupling rods to the tapered ends of the jigs. Check the hornblocks for correct vertical alignment and height, and solder in place when you are satisfied.

